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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,250	07/01/2003	Donald J. Curry	117289	3355

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OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER

HUNG, YUBIN

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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07/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/612,250	<b>Applicant(s)</b> CURRY ET AL.	
	<b>Examiner</b> Yubin Hung	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 13-22 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 7-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment/Arguments***

1. This action is in response to amendment filed 06/01/07, which has been entered.
2. Claim 6 has been cancelled, currently claims 1-5 and 7-22 are still pending.
3. In view of Applicant's amendment, the objection to the specification has been withdrawn.
4. In view of Applicant's amendment, the 35 USC § 112 rejections have been withdrawn. However, new § 112 rejections are made to claims 13-22; see below.
5. Applicant's amendment has rendered moot the 35 USC § 103 rejections of claims 1 and 2. However, upon further consideration, a new ground(s) of rejection is made in view of Avinash (US 6,246,783).

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

6. Claims 13-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, claim 13 has been amended to include the limitation "triangular filtering," the support for which is not found in the specification. Dependent claims 14-22 inherit this problem from claim 13 and are similarly rejected. [Note: for examination purpose "triangular filtering" will be interpreted as "two-dimensional filtering" as originally filed.]

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 5,694,487), and further in view of Tan et al. (US 6,707,952) and Gallagher (US 6,728,416).

Regarding claim 1, Lee discloses

- inputting a multi-bit monochrome signal which codes both weak, strong and at least one of background and foreground into a selector signal, based on the monochrome signal, wherein the monochrome signal is a multi-bit raw gray selector output signal [Fig. 1, refs. 200 (generating edge image), 500 (inputting/storing edge image); Col. 4, lines 14-38, especially Eq. 3. Note that an edge value of 0 is considered as weak and also indicating one background; on the other hand, an edge value greater than 0 is considered as strong]
- partitioning the selector signal into a plurality of uniform blocks [Abstract: lines 8-9; Fig. 1, ref. 600 & 700 (partitioning); Col. 4, line 59-Col. 5, line 3 and Col. 5, lines 8-19; Col. 7, lines 16-22]

Li does not expressly disclose performing two-dimensional filtering over each block and replacing the original weak selector signal with the filtered results.

However, Tan discloses 2-dimensionally filtering an image block [Fig. 1, refs. 150 & 160; Co. 2, lines 61-65 (being able to select a main direction implies 2-D)] and replace values of selected pixels with the corresponding filtered values [Fig. 1, ref. 170; the selected pixels are those that are not identified in Fig. 1, refs. 130 & 140 and are considered "weak" since they are not edge points].

Lee and Tan are combinable because they both have aspects that are from the same field of edge detection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Lee with the teachings of Tan as recited above. The motivation would have been to improve image quality by removing ringing artifacts, as Tan indicates in column 1, lines 30-44.

In addition, Gallagher teaches performing multi-pass filtering (not expressly disclosed by the combined invention of Lee and Tan) to an image [Fig. 6, ref. 110; Fig. 7; Col. 9, lines 37-45; Col. 10, lines 42-52; Col. 10, line 65-Col. 11, line 10].

The combined invention of Lee and Tan is combinable with Gallagher because they both have aspects that are from the same field of image filtering.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Lee and Tan with the teachings of Gallagher as recited above. The motivation would have been to improve image contrast while preserving detail and preventing artifacts in the neighborhood of large edges, as Gallagher indicates in column 3, lines 29-32.

Therefore, it would have been obvious to combine Gallagher with Lee and Tan to obtain the invention as specified in claim 1.

\*\*\*\*\*

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 5,694,487), Tan et al. (US 6,707,952) and Avinash (US 6,246,783) as applied to claim 1 above, and further in view of Yuan (US 5,367,385).

Regarding claim 2, the combined invention of Lee, Tan and Avinash discloses all limitations of its parent, claim 1.

The combined invention of Lee, Tan and Avinash does not expressly disclose subtracting a bias from the monochrome multi-bit signal to result in a signed number. However, Yuan discloses subtracting a bias from gradients. [Fig. 10, ref. 216; Col. 2, lines 39-51; Col. 10, lines 32-35. Note that since the size of the bias, which is the average difference, is not known in advance, it would have been obvious to one of ordinary skill in the art to use signed number to represent the biased gradient value.]

The combined invention of Lee, Tan and Avinash is combinable with Yuan because they both have aspects that are from the same field of edge detection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Lee, Tan and Avinash with the teachings of Yuan as recited above. The motivation would have been to improve the image quality by

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smoothing it in the appropriate direction so as not to remove or distort edges, as Yuan indicates in column 1, lines 35-40 and column 2, lines 48-51.

Therefore, it would have been obvious to combine Yuan with Lee, Tan and Avinash to obtain the invention as specified in claim 2.

***Allowable Subject Matter***

10. Note: Regarding claim 8, and similarly claim 19, "+/-K" of line 5 is interpreted as per page 16, line 3 of the specification.

11. Claims 3-5 and 7-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claims 13-22 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action.

13. The following is a statement of reasons for the indication of allowable subject matter:



- A. Regarding claims 3-5, closest art of record Lee, Tan and Yuan, alone or in combination, do not disclose, teach or suggest defining a weak or strong selector signal in the recited manners.
- B. Regarding claim 7, closest art of record Lee, Tan, Yuan and Gallagher, alone or in combination, do not disclose, teach or suggest performing a 4-pass 2-D filtering process in the recited manner.
- C. Regarding claim 13, closest art of record Lee, Tan and Yuan, alone or in combination, do not disclose, teach or suggest the specific means for performing two-dimensional filtering over each block as recited in the specification (Fig. 3, ref. 56 and P. 15, 4<sup>th</sup> paragraph-P. 16, 3<sup>rd</sup> paragraph).

***Conclusion and Contact Information***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yubin Hung  
Patent Examiner  
Art Unit 2624  
July 13, 2007

A handwritten signature in black ink, appearing to read "Matthew C. Bella". The signature is fluid and cursive, with the first name "Matthew" being more prominent and the last name "Bella" following in a similar style.

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600